IDC MarketScape

# IDC MarketScape: Worldwide General-Purpose Computer Vision AI Software Platforms 2022 Vendor Assessment

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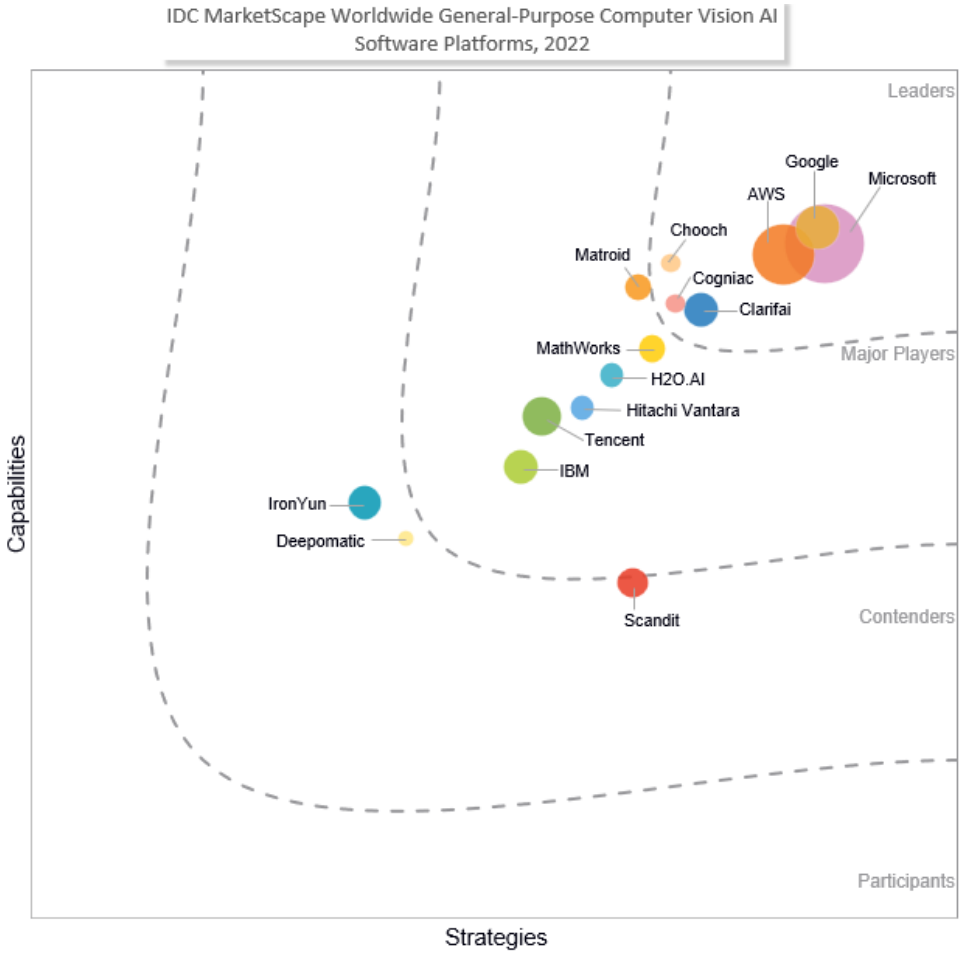
## THIS IDC MARKETSCAPE EXCERPT FEATURES CLARIFAI

## IDC MARKETSCAPE FIGURE

## FIGURE 1

### IDC MarketScape Worldwide General-Purpose Computer Vision AI Software Platforms Vendor Assessment

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Please see the Appendix for detailed methodology, market definition, and scoring criteria.

## IN THIS EXCERPT

The content for this excerpt was taken directly from IDC MarketScape: Worldwide General-Purpose Computer Vision AI Software Platforms 2022 Vendor Assessment (Doc # US49776422). All or parts of the following sections are included in this excerpt: IDC Opinion, IDC MarketScape Vendor Inclusion Criteria, Essential Guidance, Vendor Summary Profile, Appendix and Learn More. Also included is Figure 1.

## IDC OPINION

The human vision system, which gathers and interprets information through sight, remains a critical aspect as part of one's life as both a consumer and an employee (i.e., working as part of a private business or government entity). Vision is critical to performing routine tasks like navigating roadways and sidewalks; identifying, classifying, and interacting with objects and environments; and engaging with computers and digital devices. Human vision continues to develop and be fine-tuned by technology to support an ever-increasing range of dynamic events and human experiences. Yet, as our society continues to invest in R&D to advance and deploy new technology and automation techniques, there are increasing opportunities for businesses and consumers to leverage or pair (i.e., in a cooperative or human-in-the-loop manner) human sight with computer-driven sight (referred to as computer vision [CV] or computer vision artificial intelligence [CV AI]) to take the next step in delivering improved productivity, efficiency, safety, sustainability, and inclusivity.

CV has been a strong beneficiary of academic and commercialization investments to advance the fields of deep learning– and machine learning (ML)–based approaches to AI. These advancements, which have largely occurred over the past five years, look to abstract the human intelligence schema and system to interpret unstructured data in the forms of images, videos, and sensor data (e.g., radar, lidar) through complex neural networks. To develop this neural network architecture, CV technology user organizations require massive amounts of use case–specific or even generalizable training data, as well as extensive computational resources (including GPUs, TPUs, and hardware- and software-based accelerators) to train, build, and validate models that can "learn" details and characteristics from new, unstructured visual-based inputs. This approach to solving CV AI has led to breakthroughs where computers are now able to surpass the quality and efficiency of humans for multiple discrete use cases, along with delivering differentiated benefits versus humans in the areas of scale, repeatability, longevity, attentiveness, and subjectivity (to name a few).

Although deep learning–based CV is a very new technology area, IDC has seen tremendous progress in its use by organizations of all sizes and across all verticals. This includes support for (or even potentially enabling new) business and consumer use cases that can deliver insights in the areas of:

- Anomaly detection
- Augmented reality/virtual reality (AR/VR) applications
- Assembly line automation
- Asset predictive maintenance
- Digital twins
- Facial recognition and detection

- Fraud detection
- Geospatial analysis and analytics
- Health and safety compliance
- Identity and access management
- Intelligent document processing (IDP)
- Inventory management
- Media analysis and compliance
- Medical imaging
- On- or off-road autonomous/automated driving
- Optical character recognition (OCR)
- Process and task automation
- Roadway compliance, optimization, or tolling (e.g., registration, speed, parking)
- Security and facility management
- Sentiment analysis
- Shopper analytics
- Visual inspection and quality control

This IDC MarketScape focuses on one aspect of the CV ecosystem, CV software platform providers. These essential vendors make up the foundation of growth and potential of CV, and they enable customers to understand, experiment, develop, train, validate, deploy, and manage CV models for a near-infinite list of potential use cases. These providers are critical to helping customers extract the complexity of working with, utilizing, and managing CV deployments, as well as helping them understand how cutting-edge AI research techniques and approaches equate ultimately to business value. In many cases, these providers offer different low-code and no-code user interface/user experience (UI/UX) options to support organizations with a mix of potential user personas ranging from AI/ML technical specialists (e.g., data scientists, ML engineers) to traditional IT personnel (e.g., developers and computer programmers) and even line-of-business users (e.g., payroll and accounting staff).

As part of this IDC MarketScape process, IDC spoke with dozens of end-user organizations that are investing in CV platform providers to help them develop and deploy applications. These organizations, which all varied in terms of CV deployment maturity, were almost universally aligned on the tangible, business benefits provided by these CV solutions, as well as (more importantly) recognized that they should have prioritized and invested in CV earlier. These conversations reinforce the need for organizations (broadly) to think through how CV can be used to improve business, consumer, and partner interactions and capabilities both at a strategic, governance level and at a specific use case level.

## IDC MARKETSCAPE VENDOR INCLUSION CRITERIA

The criteria used for the selection of IT suppliers that were evaluated included the following:

- The provider's CV platform offering must have been commercially available to customers for purchase no later than January 1, 2021.

- The provider's CV platform offering must be available to customers to use on a worldwide basis.
- The provider's CV platform offering must be sold as a "horizontal" or support at least three of the following verticals:
  - Construction
  - Education
  - Engineering and business management services
  - Financial services
  - Government
  - IT, computer, software, or internet-related services
  - Life sciences
  - Manufacturing
  - Media and entertainment
  - Personal and consumer services
  - Real estate and legal services
  - Retail and wholesale trade
  - Telecommunications
  - Transportation and roadway management
  - Utilities, energy, and mining
- The provider's CV platform offering must support ingestion, annotation, and inferencing of images and video.
- The provider's CV platform offering must support customers needing to train and deploy customized vision models.
- The provider's CV platform offering must have active, paying customers in more than one geographic region.
- The provider's CV platform offering must have 20+ active and paying customers in production as of January 1, 2022.
- The provider's CV platform offering should be primarily based on their own intellectual property (IP).

## ADVICE FOR TECHNOLOGY BUYERS

IDC offers the following advice to technology buyers considering CV:

- **Engage with stakeholders from multiple organizations to identify and prioritize CV use cases.** In IDC's discussions with CV providers and customers, we have realized that the people and process side of a CV solution is as critical if not more critical than the technology development and deployment side. Organizations need to build sufficient inroads across multiple internal organizations to identify their more important CV use cases. This evaluation and understanding must go beyond just considering a use case's ROI (although that is critical) to include operational requirements, use case complexity, use case maturity and ecosystem support, technology resources available, deployment environments, and life-cycle management requirements.

- **Understand that no two CV platform providers are the same.** At this point in the development of the CV software platform provider market, there remain multiple, heterogeneous capability approaches and go-to-market strategies that need to be considered as part of your provider evaluation. This includes evaluating providers on attributes including use case support, available native integrations, channel/partner provider availability and road map, pretrained model availability, the expected (technology buyer) resource requirements, and support for different employment environments.
- **Evaluate the level of AI/ML abstraction that best aligns with your organization's strategy.** IDC's research shows that at this point, organizations are not yet prepared to standardize on a single CV platform provider, and instead prefer to potentially work with a small list of providers aligned to specific use cases or domains. This reinforces the need for organizations to think through provider solution support at the targeted use case level for now. For example, an organization that intends to have a line-of-business managed use case will want to prioritize providers that have designed a full-suite, end-to-end workflow for nontechnical users. IDC expects that as this market matures (which is happening rapidly already), there will be an opportunity for organizations to standardize on a single provider.
- **Experiment with CV in a low-effort, repeatable way.** Organizations new to CV often lack the foundational rigidity to sufficiently design and develop a CV solution at scale without experience/trial and error. Instead, IDC recommends that organizations work with one (or even multiple providers) in a curated, proof-of-concept, or trial-based structure to ensure that the proper governance, process alignment, and technology expertise foundation can be designed and built up front. IDC also recommends that organizations look to leverage pretrained model libraries (when available) to improve model development and validation pipelines.

## VENDOR SUMMARY PROFILES

This section briefly explains IDC's key observations resulting in a vendor's position in the IDC MarketScape. While every vendor is evaluated against each of the criteria outlined in the Appendix, the description here provides a summary of each vendor's strengths and challenges.

### Clarifai

After a thorough evaluation of Clarifai's strategies and capabilities, IDC has positioned the company in the Leaders category in this 2022 IDC MarketScape for worldwide general-purpose computer vision AI software platforms.

Clarifai offers a wide range of CV software capabilities, services, and support capabilities for technology buyers looking to build, customize, and deploy CV across a global footprint. Clarifai's strategy and vision center on the premise of helping customers realize the simplest, most efficient path to derive AI insights and business value from unstructured data modalities including images, videos, text, and audio. Clarifai accomplishes this through its fully integrated AI platform that aims to bridge the components of the ML life cycle to facilitate customer use, adoption, and scale. Clarifai's development and product team continue to invest to help prioritize and validate which cutting edge AI and usability features should be incorporated into its customer offerings, alongside more typical essential and advanced CV platform capabilities. Some examples of this are the automation and AutoML capabilities integrated into its Scribe Label product for CV annotation; its Spacetime Search product that can index and configure searches across a customer's portfolio of unstructured images, videos, and document data; its extensive Model Gallery of pretrained models that can be used as is or customized by

customers (aka Clarifai's Community); and its Flare Edge product that simplifies the optimization, deployment, and management of CV inferencing at the edge.

Clarifai's platform includes thoughtful consideration for maximizing the efficiency of multiple customer profiles whether it be a no-code interface for line-of-business and nontechnical users, a low-code interface for developers, or a fully customizable interface for an organization's data scientists and ML engineers. These capabilities and interfaces even hold true for ancillary support features including a drag-and-drop workflow tool (Mesh Workflows) that enables customers to build composite model workflows to address complex use cases and scenarios via a drag-and-drop interface.

## *Strengths*

- **Hardened platform.** Clarifai's demonstrated success working with government and defense agencies on mission-critical CV use cases has hardened the company's platform to extend to a broad range of use case requirements. Clarifai's platform architecture and experience also enable the company's customers to apply/obtain/retain certain regulatory certifications.
- **Nontechnical user interface.** Clarifai's low-code and no-code interface remain one of the most intuitive and flexible offerings examined by IDC in this study. Clarifai's workflow capabilities to build complex, composite model scenarios are particularly noteworthy.
- **Forensic data search.** Clarifai's platform includes strong capabilities for image and video asset searching and metadata tagging. This is an increasingly in-demand customer feature, especially for domains and use cases that require access to extensive video footage libraries.

## *Challenges*

- **Channel strategy.** Clarifai's strategy around the enablement of the professional services and consulting provider channel remains behind the company's competitors. Finding ways to leverage this ecosystem to more effectively scale its customer reach and end-to-end solutioning capabilities remains an area of opportunity for Clarifai.
- **Vertical targeting.** Clarifai has focused its customer outreach and platform resources on the manufacturing, media and entertainment, public sector, retail, and transportation verticals. Although its platform can support other verticals today, a considerable effort will be required to extend its capabilities for non-horizontal use cases (e.g., document processing).

## *Consider Clarifai When*

Clarifai is one of the providers developing and delivering complete, end-to-end CV solutions and should be considered by any organization looking to experiment, learn, or expand its use. Clarifai's approach to providing comprehensive support for technical and nontechnical users makes the company a strong potential choice for customers looking to democratize CV use across a diverse profile base:

- **Should Clarifai be considered for global deployments?** Yes, Clarifai can support global, regional, or in-country deployments on a global basis.
- **Should Clarifai be considered for businesses of all sizes?** Yes, Clarifai can address CV needs from small businesses to enterprises.
- **Should Clarifai be considered by all verticals looking to deploy CV?** Although Clarifai's technology can support all verticals, it is currently targeting customers in manufacturing, media and entertainment, public sector, retail, and transportation.

## APPENDIX

## Reading an IDC MarketScape Graph

For the purposes of this analysis, IDC divided potential key measures for success into two primary categories: capabilities and strategies.

Positioning on the y-axis reflects the vendor's current capabilities and portfolio of services and how well aligned the vendor is to customer needs. The capabilities category focuses on the capabilities of the company and product today, here, and now. Under this category, IDC analysts will look at how well a vendor is building/delivering capabilities that enable it to execute its chosen strategy in the market.

Positioning on the x-axis, or strategies axis, indicates how well the vendor's future strategy aligns with what customers will require in three to five years. The strategies category focuses on high-level decisions and underlying assumptions about offerings, customer segments, and business and go-to-market plans for the next three to five years.

The size of the individual vendor markers in the IDC MarketScape represents the market share of each individual vendor within the specific market segment being assessed.

## IDC MarketScape Methodology

IDC MarketScape criteria selection, weightings, and vendor scores represent well-researched IDC judgment about the market and specific vendors. IDC analysts tailor the range of standard characteristics by which vendors are measured through structured discussions, surveys, and interviews with market leaders, participants, and end users. Market weightings are based on user interviews, buyer surveys, and the input of IDC experts in each market. IDC analysts base individual vendor scores, and ultimately vendor positions on the IDC MarketScape, on detailed surveys and interviews with the vendors, publicly available information, and end-user experiences to provide an accurate and consistent assessment of each vendor's characteristics, behavior, and capability.

## Market Definition

IDC defines a computer vision (CV) software platform as a set of commercialized software tools and technologies that enable customers to design, train, build, validate, deploy, and manage CV artificial intelligence/machine learning (AI/ML) models. These models, when deployed, can derive data-based insights and inferences from unstructured images, videos, and/or sensor data (e.g., lidar, radar, hyperspectral).

General-purpose software platforms are defined as platforms purposely designed to support the broadest range of potential use cases. Although these platforms may contain specialized functions and integrations for a given domain, vertical, or use case, these general-purpose platforms should include capabilities that can broadly address or be applied to most, if not all, use cases.

## LEARN MORE

## Related Research

- *Worldwide Computer Vision AI Software Tools and Technologies Market Shares, 2021: Strong Market Growth Paired with Persistent Supplier Fragmentation* (IDC #US49569422, August 2022)
- *Worldwide Computer Vision AI Software Tools and Technologies Forecast, 2022-2026* (IDC #US49261222, July 2022)
- *Worldwide Intelligent Document Processing Market Shares, 2021: Modernizing Process Workflows* (IDC #US47774022, June 2022)
- *Worldwide Intelligent Document Processing Forecast, 2022-2026* (IDC #US47773922, June 2022)
- *IDC Market Glance: Computer Vision AI Software Tools and Technologies, 4Q21* (IDC #US47737021, October 2021)

## Synopsis

This IDC study represents a vendor assessment of the computer vision (CV) AI software platforms market for general-purpose use cases leveraging the IDC MarketScape model and assessment methodology. This assessment discusses both quantitative and qualitative characteristics that provide guidance about a CV platform vendor's offerings and strategy. This IDC MarketScape covers a variety of vendors participating in the CV AI software platforms market and focuses on providers supporting a wide variety of use cases and industry verticals. This IDC MarketScape evaluation is based on a comprehensive and rigorous framework that assesses vendors relative to the criteria and to one another. This study aims to highlight the factors expected to be the most influential for success in the market in both the short term and the long term.

"This IDC MarketScape study helps reinforce CV AI's potential to drive innovation and business value to worldwide organizations," said Matt Arcaro, research director, Computer Vision AI Tools and Technologies. "Although CV AI is largely a new technology field, platform providers continue to develop and deliver new functionalities and capabilities that allow organizations to apply the technology in new and exciting ways."

## About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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